

WHAT IS CLAIMED IS:

1. An image pickup module comprising a semiconductor chip including a photosensor array and an optical element for guiding light to said  
5 photosensor array, wherein said optical element includes a imaging unit, a light shielding layer, and adhesive formed in a position between said semiconductor chip and said optical element but  
10 excluding said light shielding layer in the incident direction of light, and said optical element and said semiconductor chip are fixed through said adhesive.

2. An image pickup module according to claim 1,  
wherein said adhesive is seal-shaped adhesive or  
15 ultraviolet hardening resin.

3. An image pickup module according to claim 1,  
wherein the adhesive formed on said semiconductor chip is provided, in a part of said adhesive, with an  
20 aperture for dissipating the pressure inside said adhesive.

4. An image pickup module according to claim 1,  
wherein a spacer is mixed in said adhesive to form a  
25 predetermined gap between said semiconductor chip and said optical element.

10085048-030102

5. An image pickup module according to claim 1, further comprising a light shielding plate for preventing light entry.

10085048-030102  
5 6. An image pickup module according to claim 1, wherein said optical element and said semiconductor chip are adhered with mutual displacement in one direction or two directions, and an electrode pad for electrical connection with the exterior is formed in  
10 an upward open position of said semiconductor chip.

15 7. An image pickup module according to claim 1, wherein said optical element is composed of an upper substrate including said imaging unit and a lower  
15 substrate including said light shielding plate.

20 8. An image pickup module according to claim 1, wherein said optical element is stereoscopic optical element including plural imaging units.

9. An image pickup module according to claim 1, wherein said optical element includes a color filter or an infrared cut-off filter.

25 10. A digital camera comprising an image pickup module according to claim 1.

11. A method for producing an image pickup module provided with a semiconductor chip including a photosensor array and an optical element including an imaging unit and a light shielding layer, the method  
5 comprising a step of adhering an optical element assembly and a semiconductor wafer bearing plural photosensor arrays with adhesive formed in a position excluding said light shielding layer with respect to the incident direction of light, a step of hardening  
10 said adhesive, and a dicing step in a position other than said imaging unit.

12. A method for producing an image pickup module according to claim 11, wherein the step of  
15 adhering said optical element assembly and said semiconductor wafer with the adhesive includes a step adhering a lower substrate assembly constituting said optical element assembly and said semiconductor wafer with said adhesive, and a step of then adjoining an  
20 upper substrate assembly constituting said optical element and said lower substrate assembly.

13. A method for producing an image pickup module according to claim 11, wherein said dicing  
25 step is a step of dicing along an area excluding said adhesive, or an area where a surfacial resin portion on said optical element is formed thinner than in

10085048.030102

other portions, or a groove formed on the surface of said optical element.

14. An image pickup module comprising an  
5 optical element provided on a semiconductor chip,  
wherein said optical element includes a first lens  
and a second lens, and said second lens is provided  
corresponding to said first lens.

10 15. An image pickup module according to claim  
14, wherein said second lens is a distributed  
refractive index lens.

15 16. An image pickup module according to claim  
14, wherein said optical element is constituted by  
adjoining an upper substrate and a lower substrate,  
and said first lens is formed in said upper substrate  
while said second lens is formed in said lower  
substrate.

20 17. An image pickup module according to claim  
14, wherein said first lens and said second lens are  
adjusted coaxially.

25 18. An image pickup module according to claim  
14, wherein said optical element is a stereoscopic  
optical element including a first stereoscopic lens

10085048.030102

formed by plural said first lenses and a second stereoscopic lens formed by plural said second lenses.

19. An image pickup module according to claim 5 14, wherein said optical element includes a color filter or an infrared cut-off filter.

20. An image pickup module according to claim 10 14, wherein said optical element includes a light shielding diaphragm layer provided with an aperture corresponding to said first lens or said second lens, and said light shielding diaphragm layer is positioned between said first lens and said second lens.

15

21. An image pickup module according to claim 14, wherein said semiconductor chip includes a microlens thereon.

20 22. A digital camera comprising an image pickup module according to claim 14.

23. An image pickup module comprising a semiconductor chip including a photosensor array and 25 an optical element for guiding light to said photosensor array, wherein said optical element includes a first lens and a second lens corresponding

10085048.030102

to said first lens, said module further comprises  
adhesive formed between said semiconductor chip and  
said optical element and excluding a light shielding  
layer, and said optical element and said  
5 semiconductor chip are fixed through said adhesive.

24. An image pickup module according to claim  
23, wherein said second lens is a distributed  
refractive index lens.

10

25. An image pickup module according to claim  
23, wherein said optical element is a stereoscopic  
optical element including four first stereoscopic  
lenses and second stereoscopic lenses respectively  
15 corresponding to said first stereoscopic lenses.

26. A digital camera comprising an image pickup  
module according to claim 22.

20

25

10085043-030102